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Sean J. O'Dell

Effectiveness of Public Area Surveillance for Crime Prevention:

Security Guards, Place Managers and Defensible Space

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Swedish National Council for Crime Prevention

Effectiveness of Public Area Surveillance for Crime Prevention:

Security Guards, Place Managers
and Defensible Space

Brandon C. Welsh
Northeastern University

David P. Farrington
University of Cambridge

Sean J. O'Dell
University of Massachusetts Lowell

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Authors: Brandon C. Welsh, David P. Farrington, Sean J. O'Dell
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Foreword

Security guards, place managers and defensible space are among the most used and discussed alternative forms of public surveillance, aimed at reducing and controlling crime in public spaces. But how well do they work? What does the research tell us?

There are never sufficient resources to conduct rigorous scientific evaluations of all the crime prevention measures employed in an individual country like Sweden. For this reason, the Swedish National Council for Crime Prevention (Brå) has commissioned distinguished researchers to carry out international reviews of the research published in this field.

This report presents a systematic review of the effects of surveillance of public spaces by security guards, place managers and measures to stimulate so called defensible space, conducted by Associate Professor Brandon C. Welsh of Northeastern University (United States), Professor David P. Farrington of Cambridge University (United Kingdom) and Sean J. O'Dell of the University of Massachusetts Lowell (United States).

The study follows a rigorous method for the conduct of systematic reviews. The analysis combines the results from a number of evaluations that are considered to satisfy a list of empirical criteria for measuring effects as reliably as possible. The analysis then uses the results from these previous evaluations to produce an overview of the effects that the preventive measures does and does not produce. Thus the objective is to systematically evaluate the results from a number of studies in order to produce a more reliable picture of the opportunities and limitations associated with public area surveillance in relation to crime prevention efforts.

In this case, each of the three systematic reviews builds upon a restricted number of evaluations. A number of questions concerning the potential crime preventive effects of public area surveillance in a country like Sweden thus remain unanswered. But the study does offer the most accessible overview to date of the use of such surveillance in order to prevent crime in public areas.

Stockholm, February 2010

Jan Andersson
Director-General

Summary

This report presents the results of three separate systematic reviews on the effects of security guards, place managers, and defensible space on crime in public places. Each of these three major or alternative forms of public area surveillance is aimed at increasing offenders' perceptions of the risks associated with committing a crime. How these measures achieve this differs in some respects and, according to Cornish and Clarke (2003), they can be grouped into three types of surveillance: formal surveillance (security guards), natural surveillance (defensible space), and place managers (or surveillance by employees).

Security guards, often referred to as private police, are the most widespread and recognizable of these forms of surveillance to prevent crime in public places. Place managers (Eck, 1995) are persons such as bus drivers, parking lot attendants, train conductors, and others who perform a surveillance function by virtue of their position of employment. Unlike security personnel, however, the task of surveillance for these employees is secondary to their other job duties. Defensible space involves design changes to the built environment to maximize the natural surveillance of open spaces (e.g., streets, parks) provided by people going about their day-to-day activities. Examples of design changes include the construction of street barricades or closures, re-design of walkways, and installation of windows.

Studies were included in these systematic reviews if the surveillance measure in question (i.e., security guards, place managers, and defensible space) was the main focus of the intervention; if there was an outcome measure of crime; if the evaluation design was of high methodological quality, with the minimum design involving before-and-after measures of crime in experimental and comparable control areas; and if the total number of crimes in each area before the intervention was at least 20. (Any study with less than 20 crimes before would have insufficient statistical power to detect changes in crime.)

Four major search strategies were employed to locate studies meeting these criteria: searches of electronic bibliographic databases, searches of literature reviews on the effectiveness of the interventions in preventing crime, searches of bibliographies of evaluation reports of applicable studies, and contacts with leading researchers. An additional four search strategies were conducted to augment these searches, including manual searches of leading international and selected journals that have published articles on public area surveillance and searches of government websites of selected Western countries.

The search strategies resulted in the identification of a total of 30 evaluations. Eleven of these evaluations focused on security guards, eight on place managers, and 11 on defensible space. Of these 30 evaluations, 12 met the criteria for inclusion and the other 18 did

not and thus were excluded. For the 12 included evaluations, five focused on security guards, two on place managers, and five on defensible space.

The reviews revealed generally encouraging results across the three different types of public area surveillance. There is fairly strong and consistent evidence that the defensible space technique of street closures or barricades is effective in preventing crime in inner-city neighborhoods. Less conclusive statements can be made about the effectiveness of security guards and place managers. This has everything to do with the small number of high quality evaluations that have been carried out on these measures. In the case of security guards, the weight of the evidence suggests that it is a promising technique of formal surveillance when implemented in car parks and targeted at vehicle crimes. The surveillance technique of place managers appears to be of unknown effectiveness in preventing crime in public places. Implications for policy and research are explored.

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February 2010

Brandon C. Welsh
David P. Farrington
Sean J. O'Dell

Brandon C. Welsh, Ph.D., is an Associate Professor in the College of Criminal Justice at Northeastern University and Senior Research Fellow at the Netherlands Institute for the Study of Crime and Law Enforcement at Free University in Amsterdam.

David P. Farrington, Ph.D., is Professor of Psychological Criminology at the University of Cambridge.

Sean J. O'Dell, M.S., is a graduate research assistant in the Department of Criminal Justice and Criminology at the University of Massachusetts Lowell.

Introduction

Closed-circuit television (CCTV) and improved street lighting are the most well developed public area surveillance measures to prevent crime that are in current use. This is true at least in terms of the body of work that has been carried out over the years to evaluate these measures. In our updated systematic reviews of CCTV and improved street lighting, we obtained and analyzed a total of 57 evaluations of high methodological quality (i.e., involving before-and-after measures of crime in experimental and comparable control areas); another 66 less rigorous evaluations were also obtained and analyzed (Farrington and Welsh, 2007; Welsh and Farrington, 2007; 2009b). Moreover, in recent years, there has been a marked and sustained growth in the use of public area CCTV in many Western nations, especially in the United Kingdom and United States (Norris and McCahill, 2006; Savage, 2007).

Other widely used surveillance measures that perform a crime prevention function in public places include security guards, place managers, and defensible space. Security guards, often referred to as private police, are the most widespread and recognizable of these alternative forms of surveillance to prevent crime in public places, and represent a growth industry (Sklansky, 2006).

Place managers (Eck, 1995) are persons such as bus drivers, parking lot attendants, train conductors, and others who perform a surveillance function by virtue of their position of employment. Unlike security personnel, however, the task of surveillance for these employees is secondary to their other job duties. There are some signs that the use of place managers is on the rise in some countries. This secondary function of surveillance is seemingly taking on greater priority (Eck, 2006; Eck et al., 2007).

Defensible space involves design changes to the built environment to maximize the natural surveillance of open spaces (e.g., streets, parks) provided by people going about their day-to-day activities. Examples of design changes include the construction of street barricades or closures, re-design of walkways, and installation of windows. They can also include more mundane techniques such as the removal of objects from shelves or windows of convenience stores that obscure lines of sight in the store and the removal or pruning of bushes in front of homes so that residents may have a clear view of the outside world. Although more difficult to gauge than security guards and place managers, the use of defensible space practices to prevent crime in public places still holds great interest today (Cozens et al., 2005).

However, little is known about the effectiveness of these other major or alternative forms of public area surveillance. This report presents the results of three separate systematic reviews on the effects on crime of security guards, place managers, and defensible space. It

focuses specifically on public area surveillance. By public areas we mean those places that individuals can make use of or visit in a free and unencumbered way. Typical public places include city and town centers, public transportation facilities like subway systems, parking lots or car parks that are available for public use, public housing communities, and parks. Our focus on public places is not meant to diminish the importance of efforts to reduce crime in private space. Instead, our focus on public places allows for a more comprehensive examination of one aspect of the current debate on surveillance and crime prevention. Our focus is also driven by the growing use of surveillance measures to reduce crime in public space.

Background

Each of these three major or alternative forms of public area surveillance is aimed at increasing offenders' perceptions of the risks associated with committing a crime. How these measures achieve this differs in some respects and, according to Cornish and Clarke (2003), they can be grouped into three types of surveillance: formal surveillance, natural surveillance, and place managers (or surveillance by employees).

Formal surveillance aims to produce a "deterrent threat to potential offenders" (Clarke, 1997, p. 20) through the deployment of personnel whose primary responsibility is security (e.g., security guards) or through the introduction of some form of technology, such as CCTV, to enhance or take the place of security personnel. Place managers cover a wide range of employed persons who by virtue of their position (e.g., bus driver, parking lot attendant, train conductor) perform a "secondary" surveillance function.

Natural surveillance shares the same aim as formal surveillance, but involves efforts to "capitalize upon the 'natural' surveillance provided by people going about their everyday business" (Clarke, 1997, p. 21). Examples of natural surveillance include the installation or improvement of street lighting and defensible space measures.

As noted above, security guards represent a growth industry. In the United States, the most recent estimates suggest that there are more than one million security guards or about 3 for every 2 sworn police officers (Cunningham et al., 1990). A substantial and growing number of these security guards work in public settings (Sklansky, 2006, 2008). According to a survey by the Mercer Group (1997, as cited in Sklansky, 2006, p. 92), 45% of all local governments in the U.S. in the 1990s contracted out some of their security work to private security firms, and an increasing amount of this work was devoted to patrols of government buildings, housing projects, and public parks (Sklansky, 2006).

This growth in security guards has also occurred in many other Western countries (Forst, 1999). In the United Kingdom, for example, the number of security guards increased by almost one-quarter (23%) between 1971 and 1991 (the latest data available). Unlike the U.S., however, the ratio of security guards to police officers in the U.K. is much lower, at 1.1 to 1 (Wakefield, 2003).

There is no one good source for information on the use of place managers in preventing crime in public areas, but a number of recent studies point to their increased use in some countries (Eck, 2006; Eck et al., 2007; Madsen and Eck, 2008).

The beginnings of this form of surveillance can largely be traced to Europe. In the U.K., the Department of the Environment implemented some of the first programs on public housing estates in the

1970s. Resident caretakers were employed to maintain the buildings and grounds, assist residents with needs related to their flats, and serve as a visible presence on the estate (Hough et al., 1980). In the Netherlands, “occupational surveillance” or surveillance by employees became an important component of government crime prevention policy in the 1980s, with initiatives dating back to the 1960s. These have included adding more inspectors on the metro, trams, and buses, introducing caretakers to council estates, and implementing a program of “Stadswacht” or city guards to patrol city streets. The city guards and many of the other people who are hired and trained to perform these tasks are often drawn from the long-term unemployed (van Dijk, 1995). The initial government funding for the public transport inspectors (also known as “VICs” or “safety, information and control” officers) was for hiring young people, most of whom were unemployed (van Andel, 1989).

Coined by the American architect Oscar Newman (1972), defensible space continues to hold a great deal of interest today as a measure to prevent crime in public places. But seemingly it plays more of a background role compared to some of the currently popular varieties of public area surveillance, especially CCTV. In many respects, it has been integrated into the urban landscape.

First implemented in public housing projects, one of the applications of defensible space was to redesign buildings to allow “residents a better view of vulnerable areas” (Hough et al., 1980, p. 8). Clarke (1997) notes that Newman’s concept of defensible space has influenced the design of public housing communities across the world.

Theoretical Perspectives

Explanations of the way these different forms of public area surveillance could reduce crime can be found in situational approaches that focus on reducing opportunity and increasing perceived risk through modification of the physical environment (Clarke, 1995), and in perspectives that stress the importance of strengthening informal social control and community cohesion by improving the physical environment and greater investment in neighborhood conditions (Taub et al., 1984; Taylor and Gottfredson, 1986).

The situational approach suggests that crime can be prevented by environmental measures that directly affect offenders' perceptions of increased risks and effort and decreased rewards. This approach is also supported by theories that emphasize natural, informal surveillance as a key to crime prevention. For example, Jacobs (1961) drew attention to the role of good visibility combined with natural surveillance as a deterrent to crime. She emphasized the association between levels of crime and public street use, suggesting that less crime would be committed in areas with an abundance of potential witnesses.

Some defensible space practices, for instance, may encourage increased street usage, which intensifies natural surveillance. The change in routine activity patterns works to reduce crime because it increases the flow of potentially capable guardians who can intervene to prevent crime (Cohen and Felson, 1979). From the potential offender's perspective, the proximity of other pedestrians acts as a deterrent since the risks of being recognized or interrupted when attacking personal or property targets are increased. From the potential victim's perspective, the perceived risks and fears of crime are reduced.

A more classical situational perspective suggests that security personnel and place managers may prevent crime because potential offenders are deterred by their increased subjective probability of being detected. These forms of surveillance may also increase the true probability of detection.

Natural surveillance such as defensible space and lighting may reduce crime by improving visibility. This deters potential offenders by increasing the risks that they will be recognized or interrupted in the course of their activities (Mayhew et al., 1979). In addition, enhanced visibility and increased street usage may interact to heighten possibilities for informal surveillance. Pedestrian density and flow and surveillance have long been regarded as crucial for crime control since they can influence potential offenders' perceptions of the likely risks of being apprehended (Newman, 1972; Bennett and Wright, 1984).

Other theoretical perspectives have emphasized the importance of investment to improve neighborhood conditions as a means of strengthening community confidence, cohesion, and social control.

Sampson et al. (1997) argued that a low degree of “collective efficacy” in a neighborhood (a low degree of informal social control) causes high crime rates. Important to the construct of weak social control is an unwillingness of neighbors to intervene on behalf of the “common good.”

As highly visible signs of investment, security guards, place managers, and some defensible space practices might reduce crime if they were perceived to improve the environment and to signal to residents that efforts were being made to invest in their neighborhood. In turn, this might lead residents to have a more positive image of their area and increased community pride, optimism, and cohesion. This might lead residents to exert greater informal social control over potential offenders in an area, even going so far as to intervene on behalf of their neighbors or for the common good.

In addition, the renovation of a highly noticeable component of the physical environment combined with changed social dynamics may act as a psychological deterrent against crime. Potential offenders may judge that the image of the location is improving and that social control, order, and surveillance are increasing (Taylor and Gottfredson, 1986). In the case of security guards, they may deduce that crime in the protected location is riskier than elsewhere and this can influence their behavior in two ways. First, potential offenders living in this area may be deterred from committing offenses or escalating their activities in this area. Second, potential offenders living outside the area may be deterred from entering it to commit crimes (Kelling and Coles, 1996; Wilson and Kelling, 1982).

It is important to acknowledge that these public area surveillance measures might also cause crime to increase. Some defensible space practices could give potential victims a false sense of security and make them more vulnerable if they relax their vigilance or stop taking precautions such as walking in groups at night and not wearing expensive jewelry. Also, these practices could, in certain circumstances, increase opportunities for crime. They may bring a greater number of potential victims and potential offenders into the same physical space. Increased visibility of potential victims may allow potential offenders to make better judgments of their vulnerability and attractiveness (e.g., in terms of valuables). Increased social activity outside the home may increase the number of unoccupied homes available for burglary.

The effects of each of the surveillance methods are also likely to vary in different conditions. In the case of security guards and place managers, the effects are likely to be greater if they are more widespread. Furthermore, the effects may vary according to characteristics of the area or the residents, the design of the area, the delivery of the intervention, and the places that are targeted. Their effects may also interact with other situational crime prevention measures such

as CCTV cameras or improved street lighting. They may have different effects on different types of crimes (e.g., violence versus property). Each of these surveillance measures may also cause crime to be displaced to other locations, times, or victims.

Research Methodology

This report brings together the results of three systematic reviews on the effects of security guards, place managers, and defensible space on crime in public places. It follows closely the methodology of this review technique. Systematic reviews use rigorous methods for locating, appraising, and synthesizing evidence from prior evaluation studies, and they are reported with the same level of detail that characterizes high quality reports of original research. Systematic reviews “take an epidemiological look at the methodology and results sections of a specific population of studies to reach a research-based consensus on a given study topic” (Johnson et al., 2000, p. 35). They have explicit objectives, explicit criteria for including or excluding studies, extensive searches for eligible evaluation studies from all over the world, careful extraction and coding of key features of studies, and a structured and detailed report of the methods and conclusions of the review. All of this contributes greatly to the ease of their interpretation and replication by other researchers. It is beyond the scope of this report to discuss all of the features of systematic reviews, but interested readers should consult key volumes on the topic (see Petticrew and Roberts, 2006; Welsh and Farrington, 2006).

Criteria for inclusion of evaluation studies

In selecting evaluations for inclusion in each of the three systematic reviews, the following four criteria were used:

- (1) The surveillance measure in question (i.e., security guards, place managers, and defensible space) was the main focus of the intervention. For evaluations involving one or more other interventions, only those evaluations in which the surveillance measure in question was the main intervention were included. The determination of what was the main intervention was based on the author identifying it as such or, if the author did not do this, the importance the report gave the primary intervention compared to any other interventions.
- (2) There was an outcome measure of crime. The most relevant crime outcomes were violent and property crimes.
- (3) The evaluation design was of high methodological quality, with the minimum design involving before-and-after measures of crime in experimental and comparable control areas. According to Cook and Campbell (1979) and Shadish et al. (2002), this is the minimum design that is interpretable. Control areas are needed to counter threats to internal validity. Before measures of crime are needed to control for possible pre-existing differences between experimental and con-

trol areas. In a few of the included studies the comparability of the experimental and control areas was difficult to gauge or not as strong as the others. We were reluctant to exclude these studies unless they were clearly inadequate.

(4) The total number of crimes in each area before the intervention was at least 20. The main measure of effect size was based on changes in numbers of crimes between the before and after time periods. It was considered that a measure of change based on an *N* below 20 was potentially misleading. Also, any study with less than 20 crimes before would have insufficient statistical power to detect changes in crime. The criterion of 20 is probably too low, but we were reluctant to exclude studies unless their numbers were clearly inadequate.

Search strategies

In order to locate studies meeting the above criteria, four major search strategies were employed:

(1) Searches of electronic bibliographic databases. The following ten databases were searched: Criminal Justice Abstracts; National Criminal Justice Reference Service (NCJRS) Abstracts; Sociological Abstracts; Educational Resources Information Clearinghouse (ERIC); Government Publications Office Monthly Catalogue; Psychology Information (PsychInfo); Dissertation Abstracts; Social, Psychological, Educational, and Criminological Trails Register (C2-SPECTR); Google Scholar; and Medline. These databases were selected on the basis of the most comprehensive coverage of criminological, criminal justice, and social and behavioral science literatures. They are also among the top databases recommended by the Campbell Collaboration Crime and Justice Group.

The following terms were used to search the databases: security guards, guardians, guardian angel, private police, public police, formal surveillance, private security, public security, employee surveillance, place managers, conductors, attendants, park keepers, doormen, assistants, occupational presence, railway spotters, bouncers, parking attendant, defensible space, crime prevention through environmental design, environmental criminology, and environmental planning. When applicable, “crime” or “surveillance” were then added to each of these terms (e.g., security guards and crime) to narrow the search parameters.

(2) Searches of literature reviews on the effectiveness of the interventions in preventing crime (see Appendix 1).

(3) Searches of bibliographies of evaluation reports of applicable studies.

(4) Contacts with leading researchers.

Both published and unpublished reports were considered in these searches. The searches were international in scope and were not limited to the English language. These searches were carried out over two periods of time: (1) up to December 2006, and (2) between January 2006 and December 2008. To ensure thoroughness, we opted to search once again the overlapping year (2006) of the two time periods.

As part of the second wave of searches, an additional four search strategies were employed:

(1) Manual searches of leading international and selected journals that have published articles on public area surveillance. The following journals were searched: *Security Journal*, *Crime Prevention and Community Safety*, *Journal of Security Administration*, *Property Management*, *Australian and New Zealand Journal of Criminology*, *Canadian Journal of Criminology and Criminal Justice*, *European Journal of Criminology*, and *European Journal on Criminal Policy and Research*.

(2) Searches of recently published research monographs and textbooks that cover situational crime prevention in general and the public area surveillance methods that are the focus of the present study. The following books were searched: *Handbook of Crime Prevention and Community Safety* (Tilley, 2005); *Third Party Policing* (Mazur and Ransley, 2005); *Crime Prevention: Approaches, Practices and Evaluations* (Lab, 2007); *Problem-Oriented Policing and Crime Prevention* (Braga, 2008); *Crime Prevention: Principles, Perspectives and Practices* (Sutton et al., 2008); and *Making Public Places Safer: Surveillance and Crime Prevention* (Welsh and Farrington, 2009a).

(3) Searches of government websites of selected Western countries, including Australia, Canada, the Netherlands, Sweden, the United Kingdom, and the United States.

(4) Searches of leading websites on criminological research and policy in the United States, including the Center for Problem-Oriented Policing and the Police Foundation.

Results

Descriptive statistics

The search strategies resulted in the identification of a total of 30 evaluations. Eleven of these evaluations focused on security guards, eight on place managers, and 11 on defensible space. Of these 30 evaluations, 12 met the criteria for inclusion and the other 18 did not and thus were excluded. For the 12 included evaluations, five focused on security guards, two on place managers, and five on defensible space. (Tables 3, 4, and 5 provide descriptive and statistical information on all 12 of the included evaluations; see below.)

Evaluations not meeting inclusion criteria

When coding evaluations, many did not meet the criteria for inclusion and thus have not been included in the systematic reviews. Altogether, 18 evaluations were excluded (six each for security guards, place managers, and defensible space). Table 1 lists these evaluations, summarizes their key features, and identifies the reasons for exclusion. The reason for discussing these evaluations here is two-fold: first, it conforms to the widely-held practice in systematic reviews of listing excluded studies and, second, it allows readers to judge for themselves the strength of observed effects in excluded evaluations compared with those included. Appendix 2 lists all of the excluded evaluations.

As shown in Table 1, ten of the 18 evaluations were excluded because no control area was used in assessing the impact of the intervention. Some of these evaluations also did not report before-after measures of crime ($n=4$). Another three evaluations were excluded because no comparable control area was used, one of which did not report before-after measures. Some of the evaluations were excluded because they were implemented in a private rather than a public setting. Almost all of the schemes appeared to be successful in reducing a range of crimes, including armed robbery, fare evasion, theft, and vehicle crime.

Table 1. Evaluations Not Meeting Inclusion Criteria.

Author, Publication Date, and Location	Reason for Exclusion	Other Interventions	Sample Size	Follow-up and Results
Security Guards (n=6)				
<i>Liaisons</i> (1977), Paris, France	No control area, no main intervention	Police patrols	1 city subway system	1 year; armed robbery: -27% unarmed robbery: -26%
DesChamps et al. (1991), Vancouver, Canada	No control area	Redesign of tickets, passes, and their vending machines	1 city transit system	2 years; SeaBus fare evasions: -36% (691 to 445) FareCard fare evasions: -78% (188 to 42)
Masuda (1992), multiple sites, New Jersey, USA	Private setting	None	4 electronics and appliance retailers, 1 distribution center	4 months; camcorder/VCR theft: -96% (475 to 17)
Farrington et al. (1993), multiple sites, UK	Private setting	Electronic tagging, store redesign	9 retail stores	3 weeks; E1 vs. C1: thefts of audiotapes, videotapes, headphones, films: +7% (112 to 120) vs. -7% (248 to 230) E2 vs. C2: theft of audiotapes, videotapes, headphones: -34% (131 to 86) vs. -36% (123 to 79)
Poyner (1994), London, UK	No control area	Walkway demolition	1 public housing complex (Lisson Green estate)	3 years; vehicle crimes: decrease (data n.a.)
Sorensen (1998), Macon, Georgia, USA	No control area	None	1 city	3 years; Watch participants were able to generate 36-52% of total calls for service to the police department that were not previously reported
Place Managers (n=6)				
Crowe & Bull (1975), multiple sites, California, USA	Private settings, no main intervention	Store changes, employee training	120 24-hour convenience stores	8 months; E vs. C; robberies: 40 vs. 57
Sturman (1979), Manchester, UK	No pre-post measures, no control area	None	99 Buses	n.a.; "amount of supervision clearly a more important factor than the age of the bus"; "significant differences between the bus types in the location of damage"

Author, Publication Date, and Location	Reason for Exclusion	Other Interventions	Sample Size	Follow-up and Results
van Andel (1989), multiple sites, Netherlands	No comparable control area	Change in bus boarding procedures	Public transportation systems in Amsterdam, Rotterdam, and The Hague	2 years; Amsterdam fare dodgers: tram: 17.7% to 9.0 %; bus: 9.2% to 1.7%; metro: 23.5% to 6.5%; Rotterdam fare dodgers: tram 5.8% to 3.7%; bus 3.8% to 1.3%; metro: 4.0% to 2.6%; The Hague fare dodgers: tram: 13.7 % to 9.5%; bus 14.1% to 2.4%
Webb et al. (1992), London, UK	No pre-post measures, no main intervention	None	Public car parks	n.a.; "staffing is a critical issue in the control of car crime in car parks"
Hauber (1993), multiple sites, Europe	No control area, no pre-post measures	None	Public transportation systems in Belgium, Denmark, France, Germany, Netherlands, Switzerland, UK	n.a.; "no statistically significant relation between (fare levels and proportion of evasion) is found"; "no statistically significant association between the price of the penalty fee and the proportion of fare evaders"
Killias et al. (2009), Zurich, Switzerland	No control area used	None	1 public transportation system	3 years; fare dodging: approximately 80% decrease
Defensible Space (n=6)				
Waller & Okihiro (1979), Toronto, Canada	No control area, no pre-post measures, no main intervention	"Operation Checkmate" (police pamphlets, film presentations)	342 metropolitan census tracts	12 months; "Surveillance; 59% of victims in 'houses coded difficult to supervise' vs. 36% non-victims; "victimized houses are less surveillable"
Mayhew et al. (1979), Greenwich, UK	No pre-post measures	None	217 telephone kiosks	1 year; average number of vandal incidents per kiosk in the 12 month period: council areas vs. non-council areas: 3.9 vs. 6.4

Author, Publication Date, and Location	Reason for Exclusion	Other Interventions	Sample Size	Follow-up and Results
Wilson (1979), London, UK	No control area, no pre-post measures	None	38 London housing estates	15 months; "vulnerability of glass to damage was particularly apparent in blocks with high densities of children"
Fowler & Mangione (1986), Hartford, Connecticut, USA	No comparable control area	None	1 residential area (Asylum Hill)	3 and 5 years; burglary: -23% (40% vs. 31%) and -26%
La Vigne (1997), Washington, DC, USA	No comparable control area, no pre-post measures	None	1 city subway system E= DC Metro C1= Atlanta MARTA C2= Boston MBTA C3= Chicago CTA	12 years: mean crime rates per 1,000,000 riders: E= 1.70, C1= 8.85, C2= 7.81, C3= 12.05
Zavoski et al. (1999), Hartford, Connecticut, USA	No control area	None	1 residential area (Hartford Housing Project)	15 months; violent crimes: -30%; drug crimes: +109%

Analysis strategy

An analysis of the findings of the effects on crime of security guards, place managers, and defensible space involved a two-step process. First, each of the included evaluations was rated on their effectiveness in reducing crime. Each evaluation was assigned to one of the following four categories: desirable effect (marked decrease in crime), undesirable effect (marked increase in crime), null effect (evidence of no effect on crime), or uncertain effect (unclear evidence of an effect on crime). This was based on reported effects; for example, the percentage change in crimes in experimental areas compared with control areas. In some cases, it was possible to calculate an odds ratio (OR) effect size. The OR is intuitively meaningful because it indicates the relative change in crimes in the control area compared with the experimental area. An OR that is greater than 1.0 indicates a desirable effect of the intervention, and an OR less than 1.0 indicates an undesirable effect. (For details on the calculation of the OR and its variance, see Welsh and Farrington, 2009b.) Table 2 presents ORs for those evaluations that provided the requisite data.

Second, an assessment was made of the accumulated evidence for each of the three forms of public area surveillance.

Table 2. Odds Ratio Effect Sizes.

Author, Date, and Type of Surveillance	Odds Ratio	95% Confidence Interval	Z	P
Laycock & Austin (1992), security guards	3.17	1.52 – 6.65	3.06	.002
Hesseling (1995), security guards	1.05	0.93 – 1.17	0.80	ns
Barclay et al. (1996), security guards	4.21	2.75 – 6.43	6.64	.0001
Poyner (1991), place managers	1.03	0.48 – 2.19	0.07	ns
Atlas & LeBlanc (1994), defensible space	1.22 (violent crime, E v C1)	1.06 – 1.41	2.75	.006
	1.46 (property crime, E v C1)	1.30 – 1.64	6.31	.0001
	1.01 (violent crime, E v C2)	0.87 – 1.18	0.15	ns
	1.33 (property crime, E v C2)	1.18 – 1.50	4.72	.0001
Lasley (1998), defensible space	1.37	1.01 – 1.84	2.03	.042
Madsen & Morgan (2005), defensible space	0.95 (total crime, E v C1)	0.27 – 3.32	-0.08	ns
	0.77 (total crime, E v C2)	0.36 – 1.65	-0.67	ns

Notes: E = experimental area; C = control area; see Tables 3, 4, and 5 for more details on the evaluations.

We drew upon the rules for accumulating evidence that were first articulated in a report to the United States Congress by Sherman et al. (1997) and updated by Farrington et al. (2006). The program types are classified into one of four categories: what works, what does not work, what is promising, and what is unknown:

What works: These are programs that prevent crime in the kinds of social contexts in which they have been evaluated. Programs coded as working must have at least two high quality evaluations showing statistically significant and desirable results and the preponderance of all available evidence showing effectiveness.

What does not work: These are programs that fail to prevent crime. Programs coded as not working must have at least two high quality evaluations with statistical significance tests showing ineffectiveness and the preponderance of all available evidence supporting the same conclusion.

What is promising: These are programs where the level of certainty from the available evidence is too low to support generalizable conclusions, but where there is some empirical basis for predicting that

further research could support such conclusions. Programs are coded as promising if they were found to be effective in significance tests in one high quality evaluation and in the preponderance of the remaining evidence.

What is unknown: Any program not classified in one of the three above categories is defined as having unknown effects.

In our other systematic reviews on the effects of CCTV and improved street lighting on crime, we were able to use meta-analytic techniques. This was not possible in these systematic reviews. The small numbers of studies, along with a couple of other issues that we discuss below, made the use of meta-analysis undesirable. This does not, however, hamper our ability to draw conclusions about the effectiveness of these different forms of public area surveillance. Importantly, our conclusions here are based on the best available scientific evidence.

Also important in our reviews are the issues of displacement of crime and diffusion of crime prevention benefits. Displacement can be defined as the unintended increase in crimes following from the introduction of a crime reduction scheme. This is the notion that offenders simply move around the corner or resort to different methods to commit crimes once a crime prevention project has been introduced. Reppetto (1976) identified five different forms of displacement: temporal (change in time), tactical (change in method), target (change in victim), territorial (change in place), and functional (change in type of crime).

Diffusion of benefits, on the other hand, can be defined as the unintended decrease in non-targeted crimes following from a crime reduction scheme, or the “complete reverse” of displacement (Clarke and Weisburd, 1994). Here, instead of a crime prevention project displacing crime, the project’s crime prevention benefits are diffused to the surrounding area, for example. Clarke and Weisburd (1994) contend that diffusion occurs in one of two ways: by affecting offenders’ assessment of risk (deterrence) or by affecting offenders’ assessment of effort and reward (discouragement).

Security guards

The five evaluations of security guards were carried out in four different countries: two in the U.S. and one each in Canada, the Netherlands, and the U.K. (see Table 3). Two of these five evaluations (Kenney, 1986; Pennell et al., 1989) are more correctly referred to as urban citizen patrols. While both security guards and citizen patrols perform a formal surveillance function, this is where their similarities end. For this reason, we discuss them separately. We begin with the results of our review of the three evaluations of security guards.

Table 3. Evaluations of Security Guards.

Author, Publication Date, and Location	Type of Intervention and Context	Sample Size	Other Interventions	Outcome Measure and Data Source	Research Design and Before-After Time Period	Results and Diffusion/ Displacement
Kenney (1986), New York, NY	Urban citizen patrols (Guardian Angels); subway stations	E = 14 patrolled subway stations, C = 14 non-patrolled subway stations	None	Crime (total and multiple offenses); police and transit authority records	Before-after, experimental-control Before = n.a. After = n.a.	Data n.a. (null effect) Diffusion/ displacement not measured
Pennell et al. (1986, 1989), San Diego, CA	Urban citizen patrols (Guardian Angels); city redevelopment area	E = 1 city area, C = secondary non-patrolled city area	Police foot patrol	Violent and property crimes; official records	Before-after, experimental-control Before = 6 months After = 30 months	E vs. C: violent crime: +91%; property crime: -40% (desirable effect for property crimes) Diffusion/ displacement not measured
Laycock & Austin (1992), Basingstoke, UK	Security guards; car parks	E = 1 parking lot, C = 3 parking lots and surrounding area	Fencing, defensible space	Theft of vehicles; police records	Before-after, experimental-control Before = 1 year After = 1 year	EB=38, EA=13, CB=152, CA=165 (desirable effect) No displacement
Hesseling (1995), Rotterdam, Netherlands	Security guards; car parks	E = 10 hot spot areas and 1 car park, C = 5 surrounding police precincts	None	Theft from vehicles; police records	Before-after, experimental-control Before = 4 years After = 2 years	EB=25,981, EA=16,494, CB=41,982, CA=27,924 (null effect) Displacement occurred (in 4 of 5 control areas)
Barclay et al. (1996), Vancouver, Canada	Security guards; commuter car park	E = 1 parking lot, C1 = 2 non-adjacent areas, C2 = 1 adjacent area	Media campaign	Theft of vehicles; police records	Before-after, experimental-control Before = 8 months After = 4 months	EB=192, EA=40, C1B=348, C1A=305 (desirable effect) Little or no displacement

Notes: E = experimental area; C = control area; EB = experimental before; EA = experimental after; CB = control before; CA = control after; n.a. = not available.

Each of the security guard studies were carried out in car parks that were experiencing high rates of vehicle crimes. In two cases, security guards were supplemented with other (secondary) interventions. In the Basingstoke study (Laycock and Austin, 1992), fencing was installed around a good portion of the car park and a number of defensible space practices were implemented, including the pruning of trees in front of some houses that bordered the car park and the building of a public footpath alongside it. In the Vancouver (Canada) study (Barclay et al., 1996), a media campaign preceded the implementation of the security patrols. All three of the evaluations measured vehicle crimes, and the length of follow-up ranged from a low of four months to a high of two years.

The Basingstoke and Vancouver schemes were highly effective in reducing vehicle thefts, and in both schemes the researchers reported little or no displacement of vehicle thefts into surrounding areas. However, the implementation of security guards in a number of car parks in the inner city of Rotterdam produced no measurable change in thefts from vehicles over a two-year period. Evidence of spatial displacement was recorded in four of the five control areas. From interviews with offenders and an analysis of the deployment of the security guards, Hesseling (1995) concluded that the Rotterdam scheme was not intense enough to deal with the volume of motivated offenders.

The program evaluated by Barclay et al. (1996) is particularly noteworthy. Bicycle-mounted security guard patrols were introduced in Vancouver's largest "park-and-ride" commuter car park to deal with increased rates of vehicle thefts. An analysis of the layout of the car park and surrounding area revealed that formal surveillance was the most viable option. Poor visibility into the car park and no nearby shops or other establishments with a regular flow of pedestrians limited the use of natural surveillance measures. The security patrols operated for one month and, as noted above, were preceded by a media campaign to inform the public about the program. Three months after the program ended, there was an average of 14 fewer vehicle thefts per month in the experimental area compared to an average of 4.5 more vehicle thefts per month in the surrounding area and 33 fewer vehicle thefts per month in the non-adjacent control areas. An analysis of displacement showed that little if any of this increase in vehicle thefts in the control area was a result of it being displaced from the experimental area.

Urban Citizen Patrols. Like their security guard counterparts, urban citizen patrols seek to furnish a deterrent threat to potential offenders and can be classified as a technique of formal surveillance (Cornish and Clarke, 2003). Citizen dissatisfaction with the police response to escalating crime problems in their immediate neighborhood or wider community or even city is often the main reason for the development

of these groups. The best known of these groups is the Guardian Angels. It is also the only known urban citizen patrol group that has been rigorously evaluated to assess its impact on crime.

The Guardian Angels organization began operations in 1979 as a small group of citizen volunteers riding the New York City subway system with the intention of “deterring crimes by their presence and making citizen arrests when serious crimes were observed” (Kenney, 1986, p. 482). During the 1980s, the Guardian Angels grew to include thousands of members across the country. Currently, the Guardian Angels have more than 90 chapters in operation around the world. Their volunteer, unarmed citizen patrols are now complimented by community education seminars on violence prevention as well as an internet safety program called Cyber Angels, which is meant as a response to citizen calls for protection from online threats (Guardian Angels, 2007).

The two evaluations of the Guardian Angels took place in New York City and San Diego in the mid-1980s (see Table 3). Kenney (1986) found that they had no appreciable effect on crime in New York City’s subway system over an unspecified follow-up period. The author noted that the evaluation was severely hampered by the overall small number of criminal incidents that occurred on the subway. At the time, criminal incidents on the subway accounted for about 2.7% of all police-reported crime in New York City. Displacement was not measured.

In San Diego, Pennell et al. (1989) found that the introduction of patrols by the Guardian Angels in a downtown redevelopment area was effective in reducing property crime but had no effect on violent crime over a 30-month follow-up period. Property crime went down 25% in the experimental area compared to a 15% reduction in the control area. Violent crime also went down in both areas, but the control area experienced a much larger reduction than the experimental area (42% vs. 22%). The authors speculated that factors other than the patrols might explain the reduction in violent crime in the experimental area. This view was borne out by the results of further analyses that showed that there was no significant association between the number of patrols and police-reported violent crime. Complicating matters further (for both property and violent crime reductions in the experimental area), police foot patrols were initiated in the redevelopment area at the same time as the Guardian Angels patrols. The authors did not measure displacement or diffusion.

Place managers

Only two evaluations of the effects of place managers on crime in public places could be included in our systematic review. Both of these were carried out in the U.K. some years ago (see Table 4). We found a

number of other evaluations of place managers in our search for studies, but each was excluded because they did not meet the criteria for inclusion. By and large, this was because they used weak evaluation designs, often a simple before-and-after, no-control condition design. Mazerolle and Ransley (2005) refer to place managers in the context of third party policing. A search of the studies they included in their systematic review did not turn up any evaluations of place managers that involved surveillance for crime prevention in public space. We now turn to a description of the two place manager studies.

Table 4. Evaluations of Place Managers.

Author, Publication Date, and Location	Type of Intervention and Context	Sample Size	Other Interventions	Outcome Measure and Data Source	Research Design and Before-After Time Period	Results and Diffusion/ Displacement
Skilton (1988), London Borough of Brent, UK	Concierge system; public housing estate (South Kilburn)	E = 169 flats (Gloucester House) C = 136 flats (Hereford House)	None	Vandalism; police and housing estate records	Before-after, experimental-control Before = 1 year After = 1 year	E vs. C: -84% (desirable effect) Diffusion/ displacement not measured
Poyner (1991), Dover, UK	Taxi business; parking garage	E = 1 parking garage C = 2 parking lots	Lighting, fencing, access control	Vehicle crimes; police records	Before-after, experimental-control Before = 2 years After = 2 years	EB=80, EA=40, CB=35, CA=18 (null effect) No displacement

Notes: E = experimental area; C = control area; EB = experimental before; EA = experimental after; CB = control before; CA = control after.

High crime levels and generally poor security in the London Borough of Brent's South Kilburn public housing estate led to the introduction of a concierge system in one of its high rise residential towers. The concierge scheme, which operated from 8:00 a.m. to 11:00 p.m., performed three main functions: receptionist services (e.g., answering calls), general assistance to residents, and maintenance of block security by controlling access through the main entrance (Skilton, 1988, p. 14).

Compared to a matched neighboring residential high rise housing block on the estate, the experimental site showed a number of benefits over a one-year follow-up period, including fewer repairs to communal areas (5 vs. 131) and elevators (28 vs. 75) (from a reduction in vandalism) and less revenue lost due to vacant flats. Neither displacement nor diffusion of benefits was measured. A cost-benefit analysis showed that the financial savings from a reduction in vandalism and associated improvements exceeded the financial costs of the concierge scheme; that is, for each British pound that was spent on the scheme,

£1.44 was saved to the Borough of Brent in one year. Capital costs were not included on the costs side of the ledger because these costs need to be spread over time, usually over the scheme's expected life span, along with corresponding debt charges (Safe Neighbourhoods Unit, 1993, p. 145). A reasonable estimate of the scheme's life expectancy was unclear.

In the other study, carried out by Poyner (1991), place managers took the form of a taxi company operating out of a multi-level parking garage in the southeastern British city of Dover. The parking garage was experiencing a range of crime problems, most notably thefts of and from vehicles. City officials in consultation with a police crime prevention officer implemented a package of situational crime prevention measures. The major intervention involved constructing an office at the main entrance of the parking garage and leasing it to a taxi company that operated from the site. The taxi business was open most hours on the weekend and from 8:00 a.m. to midnight on the other days. Other measures included lighting improvements at the main entrance and the installation of fencing at the ground level and an exit-only door to restrict access to customers of the parking garage.

To evaluate the effectiveness of this initiative, the author used as a control area two nearby open parking lots that had a similar number of parking spaces and also used the same payment system as the parking garage. The open parking lots had about half the number of vehicle crimes as the parking garage in the two years prior to the start of the program. Two years after the program began, police-reported vehicle crimes were down by half in both the experimental area (50%) and the control area (49%). Poyner found no evidence that vehicle crimes were displaced to the control parking lots.

Defensible space

Five evaluations of defensible space met the criteria for inclusion in our review. All five were carried out in the U.S. (see Table 5). Each of these involved street closures or other traffic modifications in mostly inner-city neighborhoods. Only the study by Donnelly and Kimble (1997) used other interventions. For most of the studies effectiveness was measured with a range of violent and property crimes, and follow-up periods lasted between five months and three years.

Four of the five evaluations reported a desirable effect on at least some of the crimes that were measured. In the Miami Shores study (Atlas and LeBlanc, 1994), 67 street closures and barricades were constructed across the city in an effort to curb crime and traffic problems. Two adjacent municipalities were selected as control areas: Metro Dade County and the City of Miami. Compared to the control areas, Miami Shores experienced a significant decrease in burglary, larceny,

Table 5. Evaluations of Defensible Space.

Author, Publication Date, and Location	Type of Intervention and Context	Sample size	Other Interventions	Outcome Measure and Data Source	Evaluation Design and Before-After Time Period	Results and Diffusion/ Displacement
Atlas & LeBlanc (1994), Miami Shores, FL	Street closures and barricades; city-wide	E = 1 city C = 2 adjacent municipalities (C1 = Miami; C2 = Metro Dade County)	None	Violent and property crimes; UCR crime statistics	Before-after, experimental-control Before = 2 years After = 2 years	E vs. C1: violent crime: EB=1,558, EA=1,669, CB=3,010, CA=3,947; property crime: EB=11,866, EA=9,148, CB=12,771, CA=14,388 E vs. C2: violent crime: CB=1,580, CA=1,713; property crime: CB=9,616, CA=9,870 (desirable effect for property crime) Diffusion/ displacement not measured
Donnelly & Kimble (1997), Dayton, OH	Street closures; inner-city neighborhoods	E = 1 neighborhood C = 8 surrounding police sectors	Media campaign	Crime (total and multiple offenses); police records	Before-after, experimental-control Before = 1 year After = 2 years	E vs. C: total crime: -43% (desirable effect) Some evidence of displacement and diffusion
Wagner (1997), St. Louis, MI	Traffic modification; inner-city neighborhood	E = 1 neighborhood C = 1 neighborhood and surrounding city	None	Violent and property crimes (Part I); police records	Before-after, experimental-control Before = 1 year After = 5 years	E = +11%, C = +29% (desirable effect) Diffusion/ displacement not measured
Lasley (1998), Los Angeles, CA	Street barricades; inner-city neighborhoods	E = 1 ten-block area C = surrounding patrol division	None	Violent and property crimes (Part I); police records	Before-after, experimental-control Before = 1 year After = 2 years	Assault: EB=196, EA=301, CB=174, CA=365 Homicide: E = -93%, C = +17% (desirable effect for assaults and homicides) No displacement
Madensen & Morgan (2005), Cincinnati, OH	Street barricade; inner-city neighborhood	E = 1 neighborhood C1 = 1 adjacent neighborhood C2 = surrounding area	None	Total crimes (Part I and II) and calls for service; police records	Before-after, experimental-control Before = 5 months After = 5 months	E vs. C1: total crimes (Part I and II): +31.3% (16 to 21) vs. +25.0% (8 to 10) E vs. C2: total crimes (Part I and II): +31.3% vs. +1.3% (150 to 152) (null effect) Evidence of displacement

Notes: E = experimental area; C = control area; EB = experimental before; EA = experimental after; CB = control before; CA = control after; n.a. = not available.

and theft of vehicles two years after the program was implemented, but no change was observed in robberies and aggravated assaults over the same time frame (compared to Metro Dade County). Displacement was not measured. The authors offer the following view on how the barricades and street closures might have produced the observed crime reductions:

The reduction in crime may not have been a direct result of the fact that barricades reduced traffic and discouraged nonresidents from cruising Miami Shores' neighborhoods. Rather, the barricades may have made residents feel safer and more comfortable walking around their neighborhoods, thereby increasing natural surveillance. This natural surveillance may have, in turn, deterred would-be criminals from victimizing residents. (Atlas and LeBlanc, 1994, p. 144)

In an evaluation of a traffic barrier scheme in Los Angeles, Lasley (1998) found that violent crimes went down, but there was no change in property crimes. Known as "Operation Cul de Sac" (because the barriers changed through-roads into cul-de-sacs), the Los Angeles Police Department installed traffic barriers in a ten-block area of inner-city neighborhoods that were experiencing heightened levels of gang-perpetrated violence, including drive-by shootings, homicides, and assaults. The remaining patrol division areas that surrounded the targeted site served as the control area. In the two years that the traffic barriers were in place, the experimental area, compared to the control area, experienced significant reductions in homicide and assault, but no changes were observed in property crimes (i.e., burglary, vehicles crimes, larceny, and bicycle theft). During this period of time, the author found no evidence of displacement of crimes to surrounding neighborhoods. The situation changed once the traffic barriers were removed. In the following year, homicides and assaults increased in the experimental area, and in the control area homicides increased and assaults remained constant. At least for homicides, this provided further support that the program had a desirable effect (Lasley, 1998, p. 3).

Similar efforts to close streets and modify traffic were also judged to be effective in high crime neighborhoods in St. Louis, Missouri, and Dayton, Ohio. Wagner (1997) found that the St. Louis neighborhood that implemented traffic modifications had a lower rate of increase in the overall crime rate than the adjacent (control) neighborhood. Donnelly and Kimble (1997) found that the Dayton neighborhood that implemented street closures produced substantial reductions in both property and violent crimes compared to the control areas. Displacement was not measured in the St. Louis study. In the Dayton study, the authors found some evidence that crimes were displaced to

five of the eight control areas along with some evidence of a diffusion of crime prevention benefits in the other three control areas.

The most recent evaluation of a traffic barricade scheme in Cincinnati, Ohio, by Madensen and Morgan (2005), found mixed effects across a range of crime measures. The barricade was installed in the 500 block of 13th Street, a well known hot spot for drug selling and associated violent crime and disorder problems. The barricade was designed to prevent drug buyers from exiting the interstate and turning directly onto 13th Street. Police and city officials hoped that this barricade would deter drug buyers from entering the area and eliminate the open air drug market (and associated problems) that was operating in this area of the city.

Five types of official data were collected and analyzed: Part 1 crimes, Part 2 crimes, Part 1 arrests, Part 2 arrests, and calls for police service. Set up in late July 2004 as a pilot project with a decision on its continuation to come in January 2005, the evaluation was limited to a five-month follow-up period. Potential seasonal effects were controlled by using the same five-month time frame during the previous year for the before period. Two control areas were established: the adjacent neighborhood that comprised 12th Street, and the surrounding area known as Pendleton.

The barricade produced a significant decrease in arrests and calls for service in the experimental area (13th Street) and a significant increase in the same measures in the adjacent control area (12th Street), most of which were associated with drug-related activity. However, the desirable effect on crime in the experimental area was largely negated by geographical displacement. As noted by the authors, "Although the exact amount of displacement cannot be determined, it is reasonable to conclude that there has been a high level of crime displacement" (Madensen and Morgan, 2005, p. 15). For police-recorded crime, comparisons of the experimental area and both control areas showed a null effect of the intervention (see Table 5).

Discussion and Conclusions

The reviews revealed generally encouraging results across the three different types of public area surveillance. There is fairly strong and consistent evidence that the defensible space technique of street closures or barricades is effective in preventing crime in inner-city neighborhoods. Less conclusive statements can be made about the effectiveness of security guards and place managers. This has everything to do with the small number of high quality evaluations that have been carried out on these measures. In the case of security guards, the weight of the evidence suggests that it is a promising technique of formal surveillance when implemented in car parks and targeted at vehicle crimes. The surveillance technique of place managers appears to be of unknown effectiveness in preventing crime in public places.

Limitations

A small number of evaluations can be a limiting factor in arriving at conclusions about an intervention's effectiveness as well as being able to generalize results. This matter is not unique to systematic literature reviews. Indeed, it is at the heart of the debate over the need for replication experiments. One view holds that until such time that there are a sufficiently large number of evaluations of an intervention no conclusions should be drawn about its effectiveness. Another view recognizes that it is important that policymakers, practitioners, and scholars have access to the best available information.

If one were to wait for a large number of evaluations of an important and widely used intervention (like the three under investigation here) before conducting a review, one could be waiting for many years, and in the meantime the intervention is being marketed and used, quite possibly in an inadequate or, worse yet, harmful way. As noted above, we drew upon well-established rules for accumulating scientific evidence. Important to these rules is that there exists a wider body of evaluation studies on the intervention in question. Just having two high quality evaluations that report a significant reduction in crime is not enough to warrant the conclusion that something works. Consideration of the excluded studies and theoretical literature is also relevant here.

One other limitation pertains to the use of other or secondary interventions alongside the main ones of security guards, place managers, and defensible space. This can make it difficult to isolate the independent effects of the different components as well as interactional effects of the main measure in combination with others. This is a particularly important issue that we have encountered in all of our previous systematic reviews of public area surveillance methods, and one that we have developed specific procedures to address. Of the 12

evaluations included in these reviews, just under half (n=5) used other interventions. Our first criterion for inclusion of evaluation studies concerns this: The surveillance measure in question has to be the main focus of the intervention. For evaluations involving one or more other interventions, only those evaluations in which the surveillance measure in question was the main intervention were included.

In the coding of studies, we adopted a two-stage process. First, the determination of what was the main intervention was based on the author identifying it as such. In some cases this involved a direct statement to this effect or the reporting of a timeline on the implementation of the different measures. If the author did not identify the main intervention, then we made an assessment of the importance the report gave the primary intervention compared to any others. In almost all of the five studies that included other interventions, there were sufficient details reported by the authors that specified that the intervention in question was the main one. It is important to note that we excluded a number of studies from our review because they could not meet this criterion.

The measurement of displacement of crime and diffusion of crime prevention benefits also needs to be robust. Slightly more than half (n=7) of the included studies measured displacement or diffusion effects, but even fewer used the best approach, which involves comparing experimental areas with adjacent and non-adjacent control areas. If crime decreased in an experimental area, increased in an adjacent control area, and stayed constant in a non-adjacent control area, this might be evidence of displacement. If crime decreased in an experimental area and in an adjacent control area but stayed constant or increased in a non-adjacent control area, this might be evidence of diffusion of benefits.

Adjacent and non-adjacent control areas are also needed to address the potential for contamination of control areas by the intervention. This has implications for the calculation of effect sizes. If the control area is not contamination free, the magnitude of the effect size could be underestimated. Wherever possible, we used the control area that was most comparable to the experimental area and was contamination free.

Policy implications

Important to our conclusions here about the state of what works for these alternative forms of public area surveillance is the setting in which the intervention took place, the crime type targeted, and the nature or characteristics of the intervention. In the case of street closures or barricades, four of the five were carried out in high crime inner-city neighborhoods (the other was implemented across the city),

and four produced desirable effects on overall crime or a specific crime type (violence in one case and property in the other).

One of the interesting points to emerge from the evaluations of street closures or barricades concerns an understanding of the mechanism that explains why this intervention has the effect it does. For some, the effectiveness of street closures or barricades to reduce crime depends on its physical presence. Cornish and Clarke (2003) refer to this as deflecting offenders away from crime targets. For others, the effect on crime is seen as a product of increased natural surveillance on the part of residents who now feel safer being outside. In each of the evaluations the authors argued that it was natural surveillance that caused the reduction in crime. Support for this position came from improvements in residents' perceptions of crime.

In addition to reduced crime, street barricades or closures led to increased usage of streets, parks, and other public places by the residents. This is an important benefit by itself. Increased pedestrian and traffic safety may be another potential benefit of street closures or barricades.

Our conclusion that security guards represent a promising technique of formal surveillance when implemented in car parks and targeted at vehicle crimes is based upon two evaluations, both of which produced sizable reductions in vehicle crimes in this public setting, as well as the larger body of research on this topic.

One potential drawback to this promising designation is that both of the effective programs used other (secondary) interventions: a media campaign in the study by Barclay et al. (1996) and fencing and defensible space measures in the study by Laycock and Austin (1992). Another potential drawback is that the other security guard study included in our review (Hesseling, 1995) did not produce a desirable effect on vehicle crimes in car parks. Nevertheless, the promising nature of security guards still seems valid, if only because we are not recommending wider use but instead calling for further experimentation. Unfortunately, the two urban citizen patrol studies do not add much to our knowledge base on the effectiveness of formal surveillance.

More straightforward is our conclusion that the surveillance technique of place managers appears to be of unknown effectiveness in preventing crime in public places. Only two evaluations met the criteria for inclusion in the systematic review, and they were carried out in different public settings (public housing estate and parking garage) and targeted at different crimes (vandalism and vehicle crimes). Furthermore, the study by Poyner (1991) in the parking garage produced an uncertain effect on crime. This form of surveillance could also benefit from further experimentation. But given the state of the scientific evidence at this point in time, it may be more fruitful to give precedence to other surveillance measures such as security guards. It would seem that Clarke and Bichler-Robertson's summary of the

evaluation literature a decade ago is equally applicable today: “there is little criminological research on the effectiveness of ‘place managers’ in preventing crime” (1998, p. 12).

This report is purposely focused on surveillance in public places. As discussed in the introduction, this is not to deny the importance as well as the widespread use of surveillance measures to prevent crime in private domains. Instead, our specific focus on public places allows for a more comprehensive examination of one aspect of the current debate on surveillance and crime prevention. It also recognizes the growing use of surveillance measures to prevent crime in public places in the United States and in other Western countries.

The case of place managers may, however, suggest a slight twist on this last point. In our search for evaluations, we encountered a relatively recent and growing body of empirical research, including some high quality evaluations, on place managers in private settings, especially bars and other drinking establishments (see Graham et al., 2004; 2005; Madensen and Eck, 2008; Roberts, 2007). With only one recent evaluation of place managers in a public setting – an effort to reduce fare dodging on Zurich’s public transportation system (Killias et al., 2009; see Table 1) –, it could very well be that the concept of place managers is becoming more closely aligned with private places.

Directions for research

Advancing knowledge about the effectiveness of place managers, security guards, and defensible space in preventing crime in public places should begin with attention to the methodological rigor of the evaluation designs. The use of a comparable control area in most of the included evaluations went some way toward ruling out some of the major threats to internal validity, such as selection, maturation, history, and instrumentation. It is desirable in future evaluations to compare several experimental areas with several comparable control areas. If the areas were relatively small, it might be possible to randomly allocate areas to experimental and control conditions or to have alternate periods with or without surveillance. In addition, future evaluations should include interviews with potential offenders and potential victims to find out what they know about the surveillance scheme and their views on associated social costs, to test hypotheses about mediators between the surveillance measure and crime, and to have measures of crime other than those from official sources.

It would be desirable to have a long time series of crime rates in experimental and comparable control areas before and after the intervention to investigate regression to the mean as well as the persistence of any effects on crime. In the situational crime prevention literature, brief follow-up periods are the norm, but “it is now recognized that

more information is needed about the longer-term effects of situational prevention” (Clarke, 2001, p. 29).

Cost-benefit analyses should be conducted to assess if the financial benefits of the surveillance measure outweighs its financial costs. It is also important to conduct cost-effectiveness analyses to assess how the surveillance measure compares with other alternatives in the cost of reducing crimes. Unfortunately, little can be said about the economic efficiency of any one of these three major forms of public area surveillance. Skilton (1988) carried out the only economic analysis.

Future research should also investigate more fully the displacement of crime and diffusion of crime prevention benefits associated with these public area surveillance methods. This requires the use of both comparable adjacent and non-adjacent control areas.

Advancing knowledge about the effectiveness of these different forms of public area surveillance could also benefit from testing the main theories (i.e., situational crime prevention versus community investment) more explicitly. Surveys of youth in experimental and control areas could be carried out to investigate their offending, their opinions of the area, their street use patterns, and factors that might inhibit them from offending (e.g., informal social control by older residents, increased surveillance after dark). Household surveys of adults could also be carried out, focusing on perceptions of improvements in the community, community pride, informal social control of young people, street use, and surveillance after dark. Systematic observations of areas would also be useful.

We conclude that, based on the best available evidence, security guards, place managers, and defensible space are encouraging approaches for the reduction of crime.

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Appendix 1:

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Appendix 2:

Evaluations Not Meeting Inclusion Criteria

Security Guards (n=6)

Liaisons (1977). Pour une meilleure securite des usagers du metro – la Compagnie Centrale de Securite du Metropolitain (Toward better security for subway riders – the Central Metropolitan Security Company). *Liaisons*, 233, 2-8.

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Place Managers (n=6)

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Defensible Space (n=6)

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Security guards, place managers and defensible space are among the most used and discussed alternative forms of public surveillance, aimed at reducing and controlling crime in public spaces. But how well do they work? What does the research tell us?

Finding one's bearings in relation to a constantly growing body of research and drawing one's own conclusions is often difficult. This also applies to research on the effects produced by measures intended to combat crime. Systematic reviews are one means of helping people to pick their way through the jungle of research findings. Systematic reviews combine a number of evaluations that are considered to satisfy a list of empirical criteria for measuring effects as reliably as possible. The results of these evaluations are then used to calculate and produce an overall picture of the effects that a given measure does and does not produce.

The Swedish National Council for Crime Prevention (Brå) has therefore initiated the publication of a series of systematic reviews, in the context of which internationally renowned researchers are commissioned to perform the studies on our behalf. In this study the authors have carried out a systematic review of the effects on crime of three major forms of public area surveillance: security guards, place managers, and defensible space.

Brandon C. Welsh is an Associate Professor in the College of Criminal Justice, Northeastern University, and Senior Research Fellow at the Netherlands Institute for the Study of Crime and Law Enforcement, Free University in Amsterdam.

David P. Farrington is Professor of Psychological Criminology at the Institute of Criminology, Cambridge University.

Sean J. O'Dell is a graduate research assistant in the Department of Criminal Justice and Criminology, University of Massachusetts Lowell.



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ett Wolters Kluwer-företag

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